

# Nature and Dimension of Business Risk in Downstream Natural Gas Distribution

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## Abstract

This paper analyses nature and dimension of business risk in Downstream Natural Gas distribution or City Gas Distribution (CGD) in India. The paper tries to analyse risks which may affect business prospects of a CGD entity. Though, Natural Gas Distribution is more than 4 decades old in India, its presence was limited. It's only recently i.e. post formation of Petroleum and Natural Gas Regulatory Board (PNGRB) in 2009, the industry has started witnessing some major push to the industry. The Industry is evolving and so are the PNGRB regulations. These regulations, along with recent government policies w.r.t gas infrastructure and availability, push for e-vehicle, and auto industry pricing dynamics need to be studied to analyse business risks in the industry. This becomes even more imperative, given the huge capex involved in development of City Gas Distribution infrastructure in India.

**Keywords:** Natural Gas Distribution, Business risk, Gas Infrastructure and Availability, e-Vehicle, Fuel Pricing Dynamics

## Introduction

Downstream Natural Gas distribution companies, also known as City Gas Distribution (CGD) companies are companies like Gail Gas Limited, Indraprastha Gas Limited (IGL), Mahanagar Gas Limited (MGL), Adani Gas Limited (AGL) et al, which provide piped natural gas (PNG) to industries and commercial entities for power generation and heating purposes and for cooking and heating purposes to households in a particular Geographical Area (GA). These companies also sell compressed natural gas (CNG) through CNG stations to automobiles.

City Gas Station (CGS) is to be constructed in a GA to receive gas from the main line and to further distribute the Gas through a network of steel and medium density polyethylene (MDPE) pipelines to the consumer. For marketing CNG, companies also need to set up dispensers at the fuel pumps. Thus, a large upfront capex cost for infrastructure and network creation, Gas purchase tie-ups, and regulatory/environmental approvals are required before a CGD company can even start a single domestic connection or CNG station.

A CGD company needs to submit its commitment related to Natural Gas infrastructure creation while bidding for a particular GA. As this is now one of the determining parameter of the bid, commitments tendered by the companies are on the higher side. This may necessitate an even more elevated upfront capital expenditure. It is thus vital for success of any CGD entity to have an in depth understanding of the business risk associated with the industry.

The author has looked into some of the key factors impacting profitability of a downstream Natural Gas distribution entity

## Literature Review

In 2007, Petroleum and Natural Gas Regulatory Board (PNGRB) was setup as a regulator by the Government of India (GoI) to regulate the CGD business. Prior to the establishment of the PNGRB, 35 GAs were allocated to various companies under nomination basis by state governments across India. 2007 onwards, PNGRB invites bids for authorisation of CGD companies. The companies submit their bids on various Minimum Work Program (MWP) / Cost parameters set by PNGRB. Once an entity is authorized for a particular GA, it is required to establish the CGD network in time bound manner as per the MWP. The authorization also gives the entity marketing and network exclusivity of 8 and 25 years respectively in the GA. So far CGD network has been authorized in 227 GAs in India in ten rounds of bidding.

PNGRB frames and updates various norms related to the City Gas Distribution in India which can impact cost and profitability of the business.

ICRA in their report on methodology for rating City Gas Distribution companies concludes, "The credit risk profile of CGD companies is evaluated considering the current stage of operations with respect to volume sales, gross margins, consumer mix and gas tie-ups in place; moreover future volume growth in sales is analysed vis-a-vis potential of the GA and competitiveness with alternate fuels. As project stage CGD companies have to contend with high project execution risks, given the long execution period involved and the multitude of approvals required from several agencies, factors that increase the projects' vulnerability to cost and time overruns, the status of approvals and support from the State Administration are evaluated. Being a capital

intensive industry, cash flows, capex plans, funding mix and debt repayment commitments are analysed wherein a low leverage and/ or long tenure of loan could act as a counterweight to the high business risk profile and also enable the issuers to achieve healthy debt protection metrics”.

International Energy Agency (IEA) in its 2020 review of India’s energy policies recommends Government of India to ensure liquidity in natural gas in India, by shifting from multiple pricing models and gas allocation to have a gas hub. This would ensure utilization of domestic and LNG gas in the most efficient way. Further, they observed that there are multiple organization or bodies across the government having similar, or sometimes, overlapping competencies viz. Niti Aayog, the MoPNG, PNGRB and state level authorities. This not only makes the regulations and processes cumbersome and confusing, but also, with frequent policy changes, they can deter investment. Government simplify this by clarifying roles and responsibilities related to the regulatory supervision. This would help in ensuring a non-discriminatory access regime and help both LNG imports and new gas discoveries. This would also bolster investment in gas transport and storage. They also advise to treat gas at par with other fuels for taxation purpose, and also, to include Gas under the GST regime.

Jain Vivek, deliberates that the business profile of a City Gas Distribution company is strengthened by various factors namely a) status of the company in their geographical areas, b) access to gas and availability of land to set up infrastructure for CNG and PNG , c) network effect due to the presence of existing large marketing infrastructure, d) regulatory push coming

from allocation policy, restriction on usage of petrol and diesel for public transport , and on FO/LSHS/pet coke ) the ease and comfort of using PNG .

Other factor beneficial for profitability of Natural Gas Distribution entities is the higher taxes on the competing fuels making CNG price competitive as compared to other alternative fuels on per calorie prices. India Ratings believes that as the government has a healthy collection of taxes from petrol and diesel, likelihood of this tax arbitrage narrowing is very thin. The only condition which might lead to reduction in taxes could be if there is major increase in crude prices and the government to keep the retail prices in check, decides to lower the tax ,whereas, at the same time, domestic gas price rises.

**Objective**

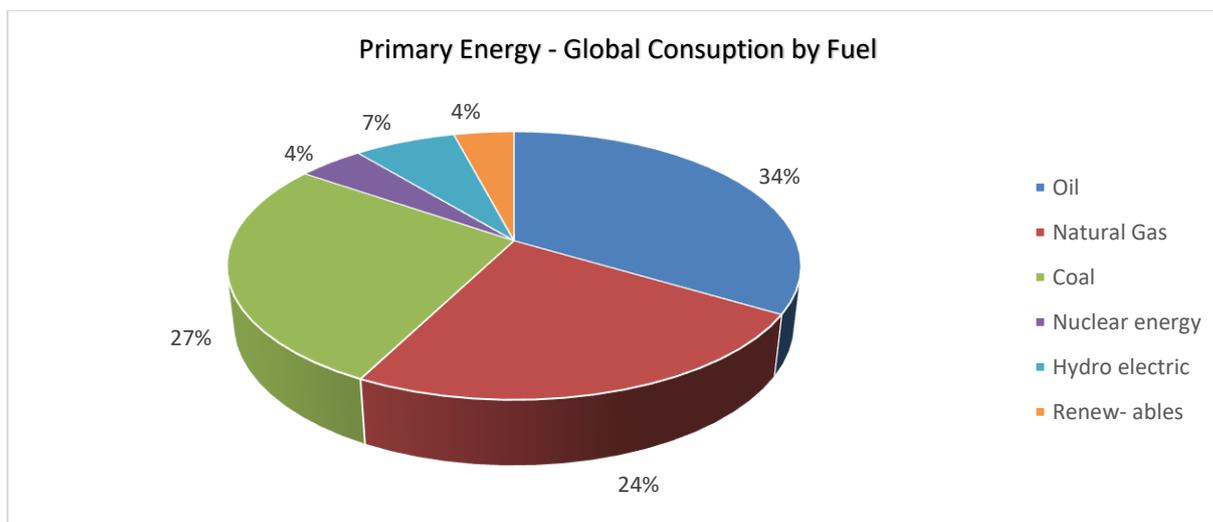
To identify the key Business Risks that might impact profitability of a downstream Natural Gas distribution entity

**Methodology**

Paper is based on study of secondary data including Annual Financial Reports of some of the existing City Gas Distribution companies.

**Global Scenario**

Natural Gas quantified for 24% of Primary Energy consumption globally in 2019. The natural gas demand has become more widespread, propelled by the availability of shale gas and the increasing supplies of LNG. Natural Gas beats oil on price, and is more convenient and less polluting than coal. This becomes important as developing countries are considering major policy changes to control pollutants.



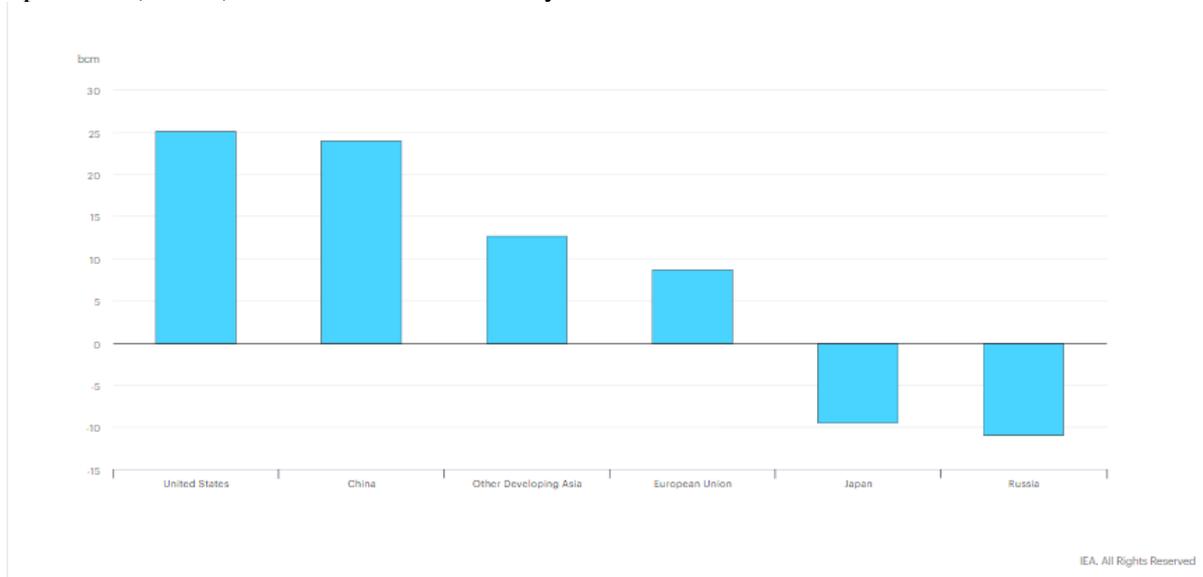
(BP Statistical Review , 2019)

However, after two years gains, growth of natural gas simmered down toto 1.8%, or 70 bcm.in 2019. This was at par with average growth rate between 2010 and 2017,

and less than half the growth observed in 2018. Demand of gas in 2019 was second to renewables, taking share of gas in world energy mix to an all-time high of 24%.

These gains were achieved in 2019 primarily on account of switching from coal to gas (55 bcm) and market expansion (50bcm) in 2019. However, they

were partly offset by milder temperatures (-11 bcm) and switch away from gas to other fuels (-23 bcm). The United States and China together accounting for over two-thirds of the increase in global natural gas consumption, remained the main growth markets in 2019.



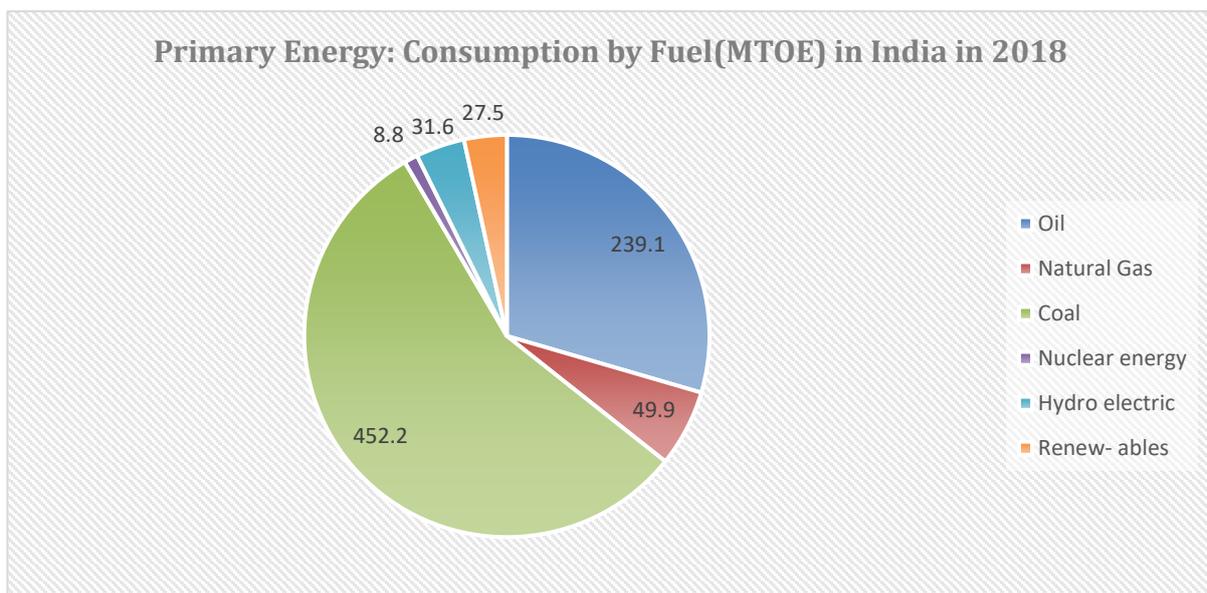
IEA, Change in gas demand in selected region, 2018 compared to 2019

Whereas, Australia’s increased LNG export capacity resulted in growth of needs of its energy industry.

In 2019, Asia Pacific region played a vital role in growth of natural gas market in 2019. In South Asia, growth resulted from increase in LNG deliveries esp in India and Bangladesh. Southeast Asian markets showed highest growth in consumption of Natural Gas.

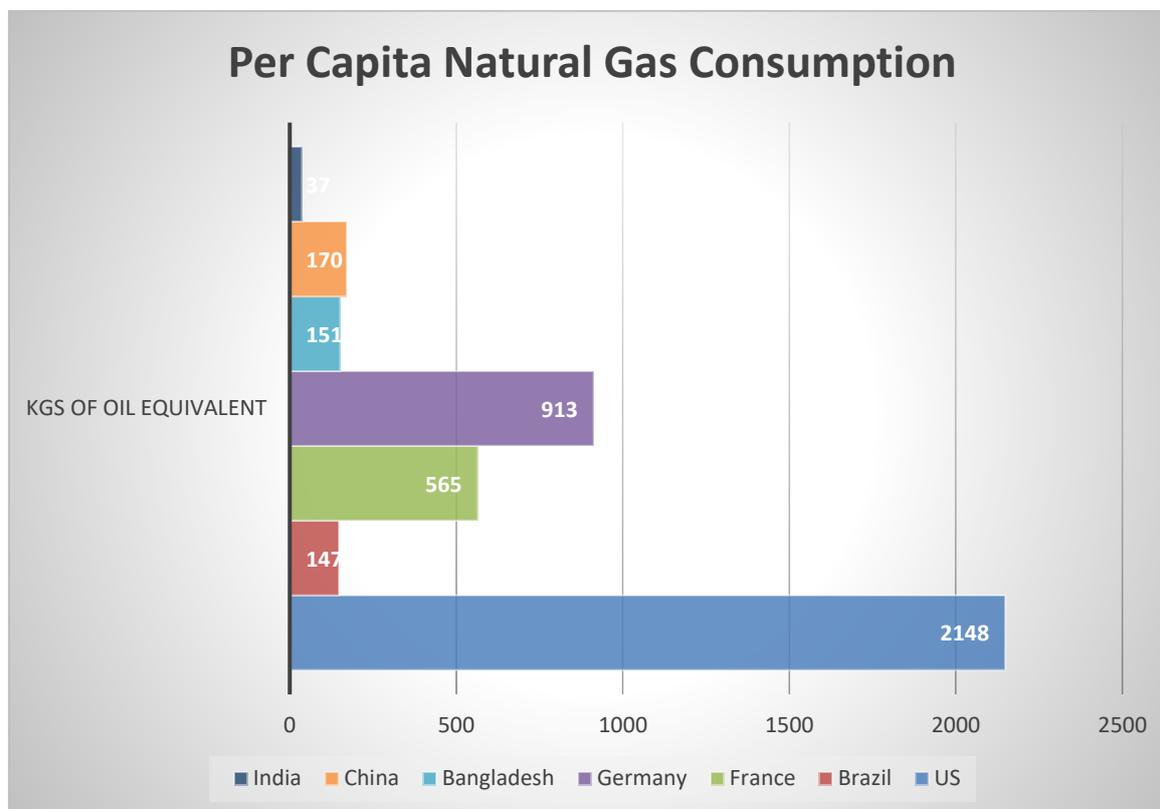
**Natural Gas in India: Potential scope**

India is one of the largest energy consumer in the world. It is the 3rd largest energy consumer in the world. However, share of Natural Gas in its total energy mix is nominal 6.16% (2018). This is in stark contrast to 24% contribution of Natural Gas in Global primary energy mix.



(BP Statistical Review , 2019)

Further, India has a very low per capita Natural Gas consumption of 37 Kgs of Oil Equivalent (KgOE). This is very low as compared to countries like US( 2148 KgOE), China (170 KgOE) or even Bangladesh which has per capita consumption of 151 KgOE. Thus, there is a huge potential for growth of Natural Gas consumption in India.



(BP Statistical Review and UN Populations Division, Department of Economic and Social Affairs, 2019)

Additionally, as a part of its “Intended Nationally Determined Contributions” (INDC) in UNFCCC, India has pledged to cut its carbon emissions intensity to GDP by 33%–35% by 2030 from 2005 level. India needs to fulfil its commitment, as well as, support its economic growth. This can be possible only if India were to add cleaner sources of energy to its fuel mix (Ernst & Young LLP, 2016). Some major INDCs committed by India are as under:

- To reduce emission intensity of GDP by 33-35% by 2030 (base year being 2005).
- To increase non-fossil fuel based energy sources to 40% of installed electricity capacity by 2030.
- To create additional carbon sink of 2.5-3 BtCO<sub>2</sub>e by afforestation and tree cover.

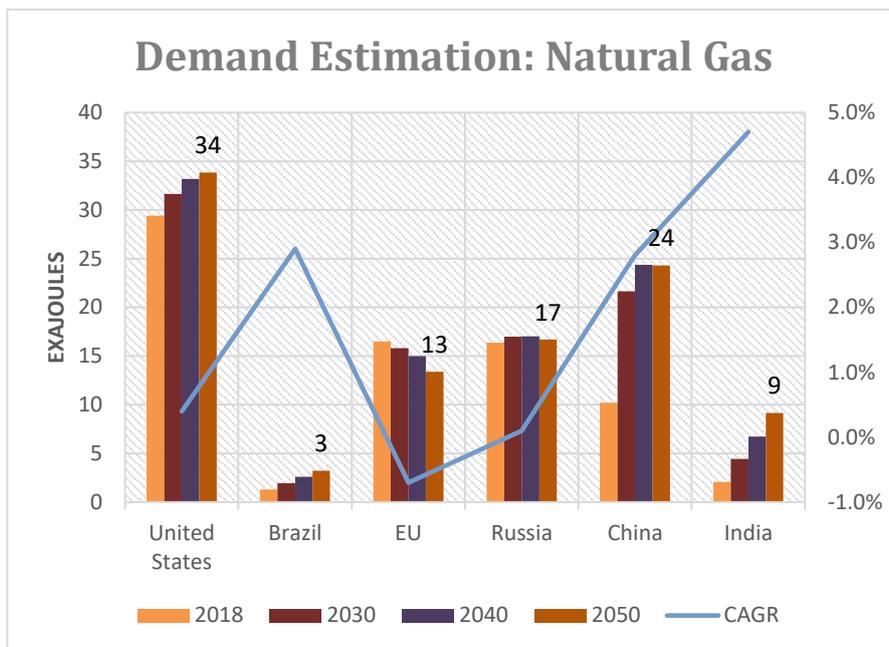
#### **Nature and Dimension of Business Risks in City Gas Distribution:**

Government of India, as a part of various measures taken to achieve INDCs, has set a target to increase

share of Gas in Energy basket to 15% by 2030. Accordingly, PNGRB has recently called multiple bids towards authorization of entities for creation and marketing of gas infrastructure in various Geographical Areas (GAs). The bids saw an overwhelming response from Industry with participation of various domestic and international players. The number of GAs after the 10<sup>th</sup> round of bid has increased to 227. However, for the industry to grow and create requisite demand towards intended consumption, there are various Business Risks factors which need to be studied and overcome as below:

#### **A. Gas Pipeline infrastructure**

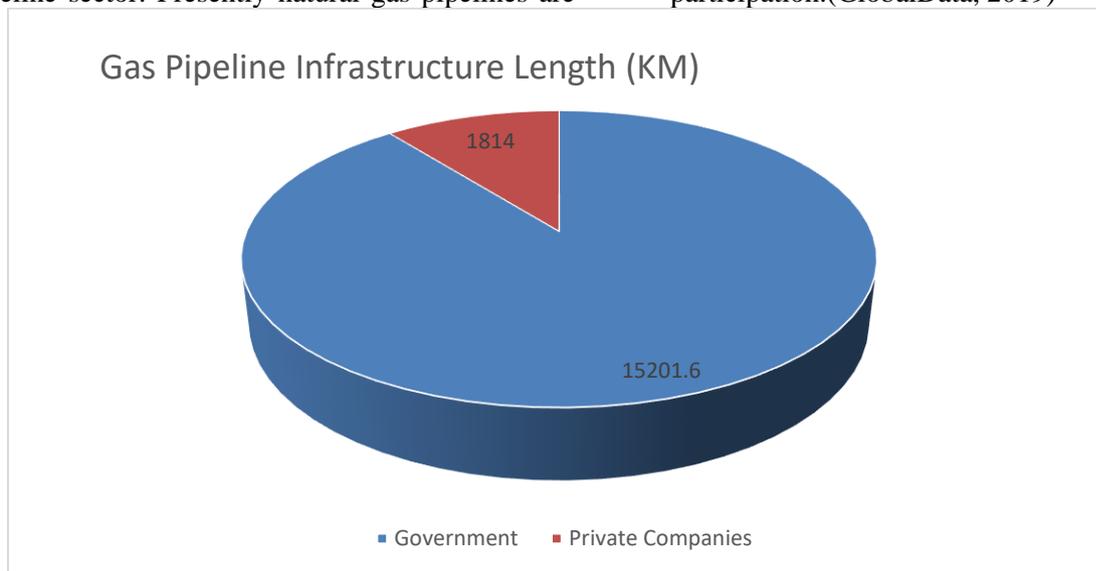
Primary energy demand in India is anticipated to grow at a CAGR of 3% to 86 EJ in 2050 from 34 EJ in 2018. This would be the highest among all the major economies taking India's share in global energy demand to 12% in 2050 from 6% in 2018. Natural Gas consumption is estimated to grow at a CAGR of 5% to 9 EJ in 2050 from 2 EJ in 2018. Thus, Natural Gas is expected to fulfil 11% of increased primary energy requirement of India.



(BP Energy Outlook, 2020)

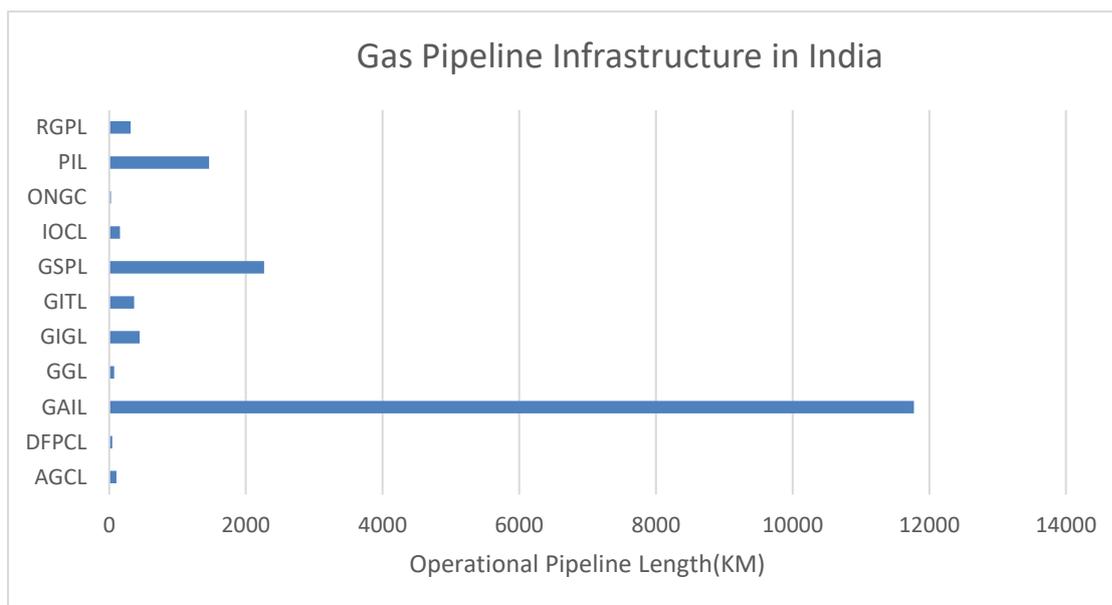
However, one of the major prerequisite to meet anticipated natural gas demand is the creation of adequate pipelines infrastructure. Although, Government of India plans to spend USD 10.2 Bn on expansion of Natural Gas pipeline network across the country and to promote gas based economy, it needs to be seen with scepticism given some of the issues holding back the development of the country’s natural gas pipeline sector. Presently natural gas pipelines are

not included under the infrastructure sector by the Indian government. Once the pipelines sector attains ‘infrastructural status’, it is entitled to concessions and benefits such as the ability to raise capital on easier terms and for longer tenures from a variety of lenders such as from insurance companies and pension funds. The issues affecting the development of natural gas pipelines have led to low private sector participation. (GlobalData, 2019)



(PNGRB, June 2020)

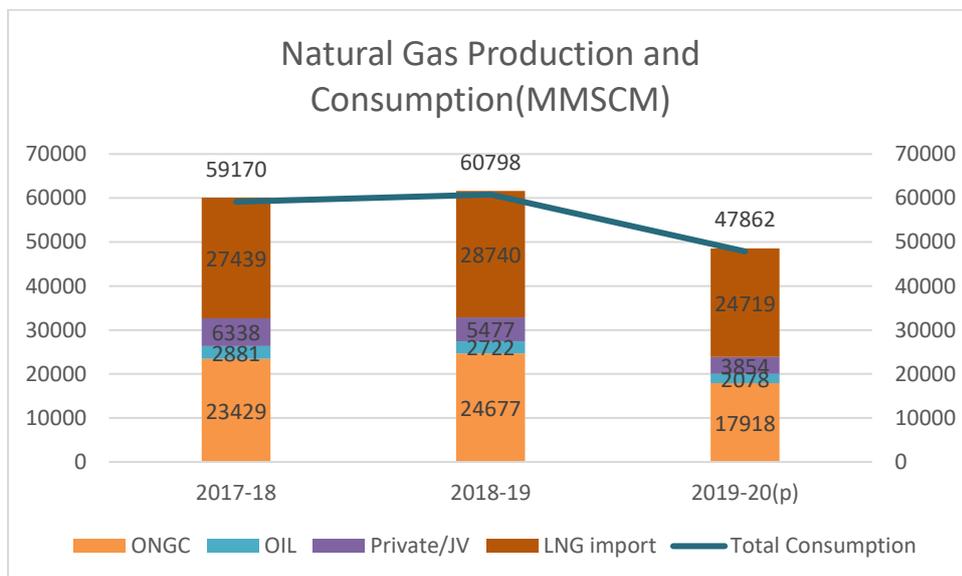
Gas pipeline network in India is currently dominated by Gail (India) Limited, a Government of India entity having 70% of the infrastructure. GSPL and PIL are two other major players in the sector.



(PNGRB, June 2020)

**B. Gas Availability and Pricing :**

India is classified as a diversified Gas importer by IEA(2018), Global Security Review. 48% of its Gas requirement is fulfilled by domestic production ,whereas , balance 52% is fulfilled by imported LNG procured under long term contract or on spot basis from various countries.



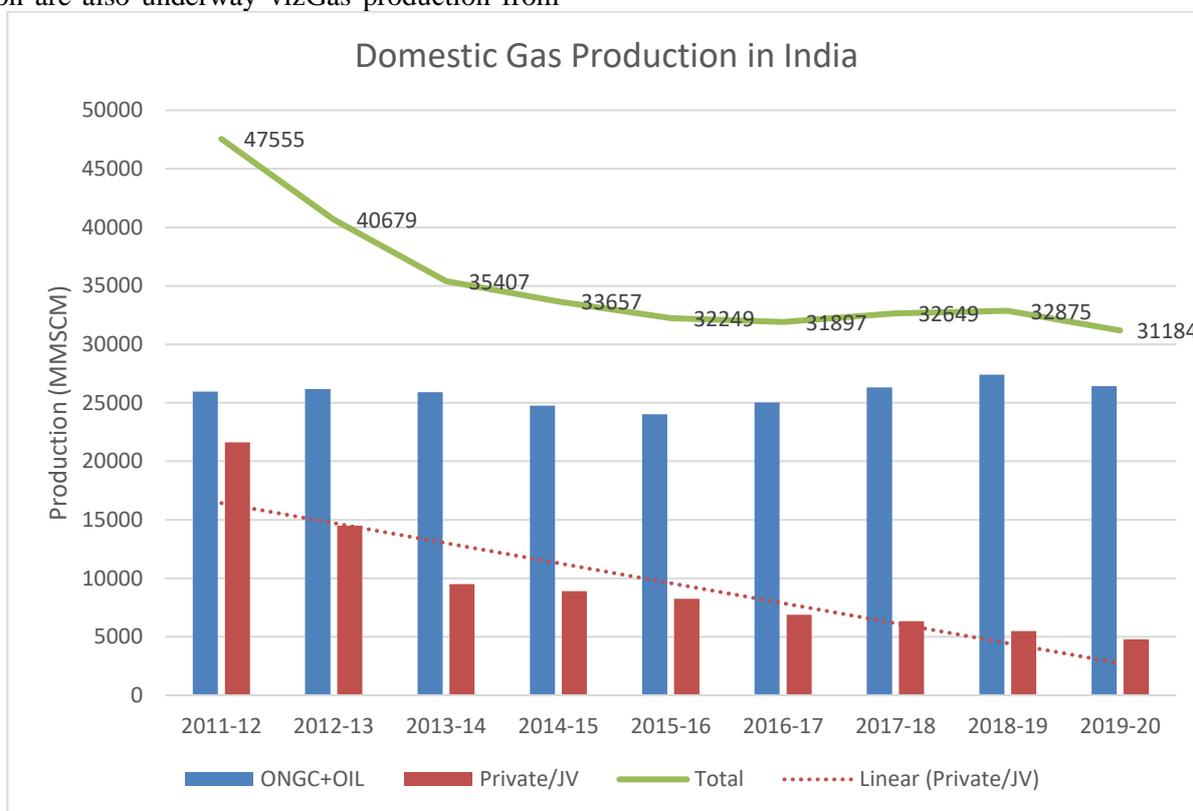
(Petroleum Planning and Analysis Cell (PPAC), December, 2019)

Prices of Domestic gas linked to very low international references iegas prices in US, UK, Canada and Russia are considerably lower than imported LNG.Domestic households and CNG(Transport) segments under CGD sector are given priority in Domestic gas allocation.CNG (transport) segment, which is currently one of the most profitable product, competes with Diesel/Petrol vehicles. Margins of the segment depends upon Diesel/Petrol prices on the demand side,

andavailability of domestic gas on the supply side. Historical data suggests a high positive correlation between Gas and Crude prices. However, domestic gas availability might get effectedif the current trend of decline in local productioncontinues in future. This would increase dependence RLNG impacting margins of the CGD companies. The domestic gas productionhas come down to 31184 scmm in 2019-20 from 47,555 scmm in 2011-12.Furthermore, as a large

number of new GAs have had been added to the CGD network by PNGRB in recent years, this would put additional demand pressure on the domestic gas. Nonetheless, some efforts on increasing local gas production are also underway viz Gas production from

upcoming R-cluster fields of offshore KG-D6 blocks of Reliance is expected to start soon and is expected to ramp up to 11000 mmscm by 2023.



(Petroleum Planning and Analysis Cell (PPAC), September, 2020)

On the other hand, requirement of Natural Gas for Industrial and Commercial PNG segment is fulfilled by RLNG. These segments directly competes with Furnace Oil and commercial/bulk LPG. Thus, cost of crude prices Vis a Vis RLNG is critical for staying competitive in these segments.

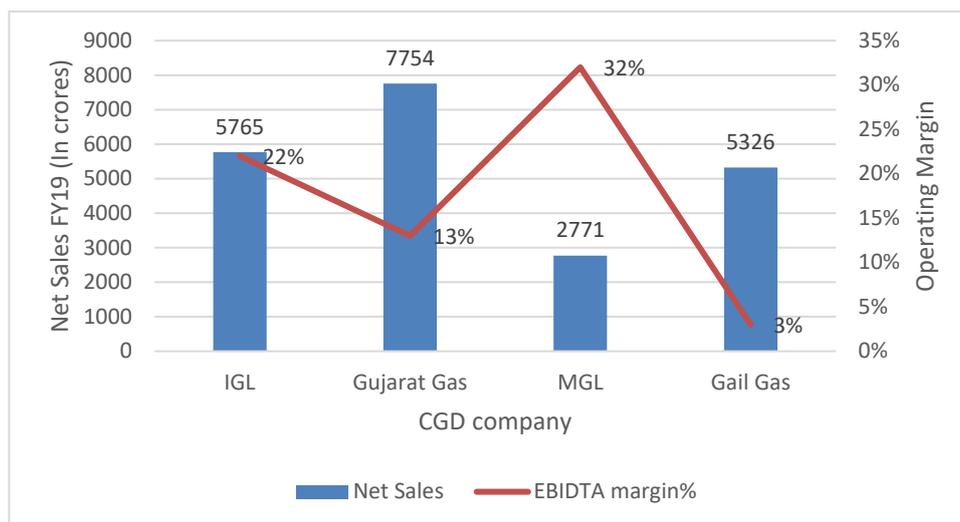
### C. Regulatory and Policy Risk

CGD sector is subject to regulations coming from multiple government bodies viz, Ministry of Petroleum and Natural Gas (MoPNG), PNGRB, Directorate General of Hydrocarbons (DGH), Niti Aayog. Combined with Government of India policies, judicial orders, Taxation laws, and State Government regulations etc., CGD can be a complex business to be in. As these institutions have overlapping competencies, Government of India (GoI) should clearly enumerate and clarify their specific roles and responsibilities. This can be implemented by given more strength to regulatory oversight and independence (International Energy Agency (IEA), 2020). Some of the decisions by GoI, Judiciary etc which have impacted CGD business in India are as below:

- Various regulations related to gas transport rates, access to city gas networks, as well as regulations related to registration of companies for LNG, gas storage and city gas distribution.
- Supreme Court's ruling related to registration of diesel vehicles, ban on pet coke and FO in various states, conversion of app based taxis to CNG etc.
- Implementation of BSVI compliant vehicles, priority allocation of domestic gas to CGD
- Non-inclusion of Crude oil, including gas under GST regime
- Push for Electric Vehicles by Niti Aayog

### D. Consumer Mix

Consumer mix of a GA is one of the most important factors which determines profitability of the CGD Company operating out of it. CNG (transport) and Industrial/Commercial PNG have the higher margin as compared to domestic PNG.



Net sales of Gail Gas Limited (GGL) and IGL was similar in 2019. However, there is a stark difference in the operating margins of the companies. Operating profit of IGL in FY19 was Rs 1257 crores against Net sales of Rs 5765 crores which translated into operating margin of 22%. Whereas, during the same period, operating profit of GGL was only Rs 160 crores against Net sales of Rs 5326 crores i.e. operating margin of merely 3%. The reason for this huge difference in the margins can be attributed to the dissimilar consumer mix of the geographies that they operate in.

IGL and MGL both derive majority of their sales from CNG segment (>70%) and hence their operating margins are much higher. Gujarat Gas, on the other hand, has uniform sales across the spectrum as reflected in their margins. In contrast, majority of the sales of GGL were from PNG sales to domestic households, and large fertiliser companies, where margins are much lower.

### E. Payback period and limited marketing exclusivity :

PNGRB under the PNGRB Act, 2006, had allowed companies network and marketing exclusivity 5 and 25 years respectively from the date of authorisation until 8<sup>th</sup> round. 9<sup>th</sup> round onwards, marketing exclusivity has had been increased from 5 years to 8 years and further extendable upto 2 years based on physical performance . Development of infrastructure in CGD usually takes 2-3 years, this includes laying of pipeline network, CGS, and CNG stations etc. Further, for operations to reach a commercially viable level it takes additional 3-4 years. Thus, payback period in a CGD project could be upto 7-8 years due to slower scale-up of sales and large upfront capital outlay. Though, marketing exclusivity has been extended by 3 years ie upto 8 years since 9<sup>th</sup> round, capex is also expected to go up substantially due to revised PNGRB bid norms, wherein, creation of infrastructure related to domestic connections and CNG

stations has been made one of the main the selection criteria. This has resulted in higher infrastructure creation numbers submitted by the bidders, and thereby, high capex costs and longer pay back periods.

Despite operational and regulatory issues, post completion of marketing exclusivity period, possibility of untapped consumer esp. large industrial and commercial companies, migrating to a gas player offering competitive pricing cannot be denied. However, the existing authorised entities are trying to forestall this by entering into long term contract with their large customers. Despite completion of marketing exclusivity period of IGL Delhi in 2011, it continues to be the sole distributor of natural gas. In order to protect itself against competition, IGL has entered into long term arrangements with some of its key customers which gives it assured business. For example, the company has signed a 10 year contract with Delhi Transport Commission (DTC), which accounts for 20-25% of IGL's annual CNG sales volume. Moreover, the company has entered into agreement with OMCs for exclusive use of their outlets for CNG distribution to mitigate potential competition to IGL for CNG marketing from OMCs, which have already established infrastructure.

### Conclusion:

Post completion of work program in the Geographical Areas awarded under the tenth CGD round, covering 27 states and union territories, natural gas will be available in 228 Geographical Areas, which will result in access to gas in 50 per cent of its geographical area or 70 per cent of the country's population. However, for the industry to grow and create requisite demand towards intended consumption, key Business Risk factors viz Gas Pipeline Infrastructure, Gas Pricing and Availability, Regulatory and Policy Risks, Consumer Mix, and Payback period and limited marketing exclusivity need to be studied. This would

allow the CGD entities to undertake measures of strategic adjustment to achieve desired profitability.

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